

V.P.M.'s B. N. BANDODKAR COLLEGE OF SCIENCE, THANE  
IV SEMESTER END EXAMINATION- MARCH - 2017

S.Y.B.Sc.  
USBT-401

Duration:2 hrs. 30mins.

Total Marks-75

- N. B. 1) All questions are compulsory.  
2) Figures to right indicate full marks.  
3) Draw neat and labeled diagrams wherever necessary

Q.1 A. Answer the following (Any Two)

12

- 1) Give an account of different types of seals used in fermenter .
- 2) Explain in detail sterilization process of a fermenter .
- 3) Distinguish between batch and continuous fermentation .
- 4) Write a note on surface and submerged fermentation .

Q.1 B. Attempt the following (Any Four)

8

- 1) Give the functions of baffle.
- 2) How corrosion is prevented in fermenter ?
- 3) Name any two types of spargers.
- 4) Give examples of antifoaming agents .
- 5) Give examples of anaerobic organisms .
- 6) Citric acid fermentation is example of which type of fermentation?
- 7) Explain the term Inoculum development .
- 8) State the function of stirrer glands .

Q.2 A. Answer the following (Any Two)

12

- 1) Discribe the different methods used to measure cell mass with the help of diagram.
- 2) Explain in detail diauxic growth with the help of Monod's experiment.
- 3) Justify: Obtaining synchronous cultures is difficult.
- 4) Write a note on method to determine efficiency of growth.

Q.2 B. Attempt the following (Any Four)

8

- 1) Discuss the effect of limiting nutrient on growth of organism?
- 2) Explain the significance of phenomenon of programmed cell death in death phase.
- 3) If the bacterial population increases from  $10^6$  cells to  $10^{12}$  cells in 5 hours, find the generation time of the organism.
- 4) State the significance of chaperones .

P.T.O.

- 5) What is shift up experiment?
- 6) When are the cell constituents measured as a measure of growth?
- 7) State the advantages of direct microscopic count over viable count methods.
- 8) State the significance of Dps.

**Q.3 A. Answer the following (Any Two)**

12

- 1) Explain the principle and working of column chromatography .
- 2) Describe the different types of UV-Visible Spectrophotometer .
- 3) Explain the types of Chromatographic procedures .
- 4) Diagrammatically explain the components of colorimeter .

**Q.3 B Answer the following (Any Four)**

8

- 1) Define stationary phase .
- 2) Enlist the desirable characteristics of a solvent system .
- 3) Define Beers law .
- 4) Explain the term: Difference spectra .
- 5) Justify the statement: filter used should be color complementary to that of solution under test .
- 6) Give examples of the light sources for UV range.
- 7) Define adsorption chromatography.
- 8) Give examples of column used in column chromatography .

**Q.4 Answer the following.**

15

- 1) Write a note on SSF. OR
- 1) Give account of different types of agitators used in fermenter
- 2) What are continuous cultures? With the help of diagram diagram explain the chemostat system. OR
- 2) Discuss arithmetic growth with the help of examples.
- 3) Write a note on Paper chromatography OR
- 3) Explain the principle of UV-Visible spectrophotometer and give details of applications.

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